REMARKS

Applicant's remarks, below, may be preceded by related comments of the Examiner, presented in small bold-faced type. References herein to the "Specification" refer to the specification of the present application as filed on June 10, 1999.

General Remarks

3. The affidavit under 37 CFR 1.132 filed on July 25, 2003 is insufficient to overcome the rejection of claims 25, 27-28, 30-31, 33-36 and 38 based upon insufficiency of disclosure under 35 U.S.C. 112 First Paragraph, as set forth in the last office action because the Perroux affidavit in Paragraph 13 merely quotes the claim and indicates where in the specification and figure the second zone comprising a half sphere is described. It does not indicate where in the specification the process of how the polygon will execute a trajectory through a second zone represented by a half sphere extending interior to the modeled object during its motion is explained. It is impossible to understand how a polygon, e.g. a triangle, a rectangle or a hexagon will execute a trajectory through a half sphere extending interior to the modeled object and be part of the boundary of the swept volume. The examiner respectfully disagrees with the affidavit of Perroux that the disclosure is sufficient to enable the implementation of the claimed invention.

The applicants' response to the Office Action of March 25, 2003 describes in Page 5 what the swept volume is and how it is generated. However it does not indicate where in the specification the process of how the polygon will execute a trajectory through a second zone represented by a half sphere extending interior to the modeled object during its motion is explained.

The claims of the application have been amended to clarify the invention being claimed. Based on a further review of the specification and claims, applicant believes there may be some confusion regarding the use of the term "polygon" and that this confusion has resulted in the Examiner's inability to understand "how the polygon ... will execute a trajectory through a half sphere extending interior to the modeled object and be part of the boundary of the swept volume."

The following explanation may assist the Examiner in understanding the specification and claims. It should be understood that, within the CAD/CAM arts, the term "polygon" can be used in different contexts. Within the present application, two contexts are used. In a first context, the term "polygon" has been used to refer to a modeled object itself. For example, the octagon model of figures 4 through 9 is a "polygon". In a second context, the term "polygon"

refers to elements forming a tessellated representation of a modeled object. In this context, the tessellated representation of the modeled object comprises polygons plus edges. For example, a sphere may be represented by numerous "polygons" joined at their edges. When the term "polygon" is used in the second context, the polygons being referred to are typically triangles, hexagons, or squares. It is well know that a tessellated representation composed primarily of triangles may, instead, be formed from another "polygon" such as hexagons.

To clarify the claimed invention, in independent claims 25, 31 and 35, the term "polygon" has been replaced by "triangles" and the claims have been amended to make clear that said triangles form a tessellated representation of the modeled real-world object. Independent claim 36 has been amended to make clear that the recited referenced edges are elements of a tessellated representation of the modeled real-world object".

It is believed that, with the foregoing amendments, the claims are clear and fully supported by the specification. Thus, the claims and specification make clear that

(i) the modeled object is moving along a trajectory (see page 6, figures 2 to 9),

(ii) accordingly, the triangles and the edges constituting said modeled object are also moving along the trajectory; and

(iii) the subsets of edges and/or triangles that have a virtual trajectory through a first or a second zone is determined.

With this in mind, it should be clear that the edges or the triangles do not actually enter in the object or in a material zone but rather "enter" a representation of a virtual zone occupied by the object at its preceding position (this is disclosed in the specification as, for example, the zone shown in black on figure 7). The claims now explicitly incorporate this disclosure of the "virtual" zones of Fig. 7 and the corresponding specification by reciting that the second zone represents a space that had been occupied by the modeled object when the modeled object was

positioned at said preceding position. Accordingly, it should now be clear from the specification and claims that a triangle (or edge) following its trajectory, passes through said zone, that the second "zone" is not part of the object itself, but is a space having particular positional relationships to a position of the object, and that, where there is motion through such a zone, said triangle is taken into account for the computation of the swept volume.

With regard to the affidavit of Francois' Perroux, it is hereby represented that Mr. Perroux's affidavit generally uses the term "polygon" to refer to an element of a tessellated representation of an object.

Based on the preceding explanation, and on the amendment to the claims, applicant believes that the specification does indicate how polygons (in particular, triangles) forming the tessellated representation execute a trajectory through the second zone where that zone has a positional relationship as described above and in the amended claims. Applicant respectfully requests that the Examiner withdraw the rejection of the pending claims based on the asserted insufficiency of the disclosure under 35 U.S.C. § 112 ¶ 1.

> **Claim Rejections - 35 USC § 112**
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> **6. Claims 25, 27-28, 30-31, 33-36 and 38 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

The Examiner's rejections of claims 25, 31, 35, and 36 appears to raise substantially the same issues. With regard to claim 25, the Examiner stated this issue as:

> **. . . It is impossible to understand how a polygon, e.g. a triangle, a rectangle or a hexagon will execute a trajectory through a half sphere extending interior to the modeled object and be part of the boundary of the swept volume. For example, when a book is rotated about an axis the end rectangles produce half cylinders, which are not entirely within the material of the object. The applicants have failed to provide proper explanation in the specification making it impossible for one of ordinary skill in the art to make and use the system.**

The undersigned believes that the claims, as amended, are now clear and supported by the specification. In particular, amended claim 25 now recites that the triangles moving through the

second zone are elements "forming a tessellated representation of the modeled real-world object" and that the second zone represents a space that had been occupied by at least a portion of the modeled object when the modeled object was positioned at said preceding position. By this language it should now be clear that what the claims call for is a computation determining whether, based on its current trajectory, a triangle in a tessellated representation is moving into the second zone where that second zone has the positional relationship described above and in the claims. The claims do not require that the triangles move within the object per se, but merely within certain spaces having positional relationships to the object at certain defined positions. The other independent claims (31, 35, 36) have been amended in an analogous manner and are likewise supported by the specification.

CONCLUSION

Claims 25, 28, 30, 31, 33, 35, 36, and 38 remain pending and are believed to be in condition for allowance and fully supported by the specification. Applicants respectfully requests that all pending claims be allowed.

Please apply any credits or excess charges to our deposit account number 50-0521.

Respectfully submitted,

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